

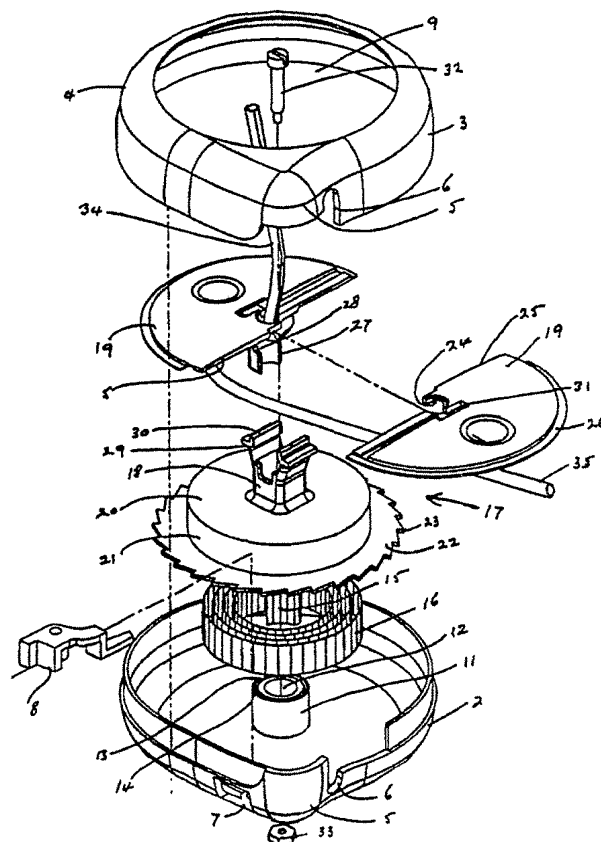
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(54) Title: CABLE STORAGE DEVICE

(57) Abstract

An electrical cable storage device comprises a two part hollow casing (1) having a cable outlet (6) opening on the line of join of the two parts (2, 3) of the casing (1) and a cable inlet (9), and a cable reel (17) within the casing (1), the reel (17) being rotatable within the casing (1) to allow cable (34, 35) to be wound on to the reel, the reel comprising a shaft (18) and a disk adjacent (19) the cable inlet (9) of the casing (1) which is detachable from the shaft (18) and formed in two parts with a central cable receiving aperture (24) on the line of join (25) of the two parts, the shaft (18) of the reel (17) at the end receiving the split disk (19) having at least one axial slot extending from the end (29) of the shaft (17) whereby a cable (34, 35) inserted through the aperture (24) in the split disk can pass through the slot into the interior of the casing (1) and through the cable outlet (6), and means for rotating the reel to wind cable on to the reel.



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CABLE STORAGE DEVICE

This invention relates to a cable storage device for use with electrical cable and, more particularly, provides a cable storage device that can be fitted to an electrical cable while each end of the cable is terminated in an electrical
05 connector or connected to an electrical appliance.

BACKGROUND TO THE INVENTION

Many electrical appliances and cables for electrical appliances are nowadays provided with a permanently attached connector at
10 each end. For safety reasons domestic appliances such as hair dryers, electric kettles, and the like are provided with a cable which has a sealed plug which can only be removed by cutting the cable. Computer accessories, such as mice, have a permanently fixed connector at one end and are permanently
15 attached to the accessory at the other end. Telephone wires are normally terminated by a jack plug at each end.

Frequently such wires and cables are of considerable length and the trailing wires can be a great nuisance.

20 A device has been proposed for attachment at the approximate mid point of a cable which comprises a housing with a cable receiving slot and a reel within the housing and having means for holding a loop of cable inserted through the slot so that

-2-

on rotation of the reel the cable is drawn through the slot and wound on the reel. Because the cable on both sides of the loop is wound on the reel the effective use of the device is limited.

05 Accordingly, it would be an advantage if a cable storage means could be provided which could be attached at a point other than the mid point of a cable, for example at one end of the cable, either to shorten the cable without cutting it or to allow storage of a cable while apparatus is not
10 functional and which will allow the cable to be released from storage when desired.

Currently, however, there is no such storage device that can be used with a cable that has an appliance or a connector
15 permanently fixed at each end.

BRIEF DESCRIPTION OF THE INVENTION

This invention provides a cable storage device that can be fitted at any point along the length of an electrical cable
20 while the cable has a connector or an appliance attached at each end.

-3-

According to the invention, an electrical cable storage device comprises a two part hollow casing having a cable outlet opening on the line of join of the two parts of the casing and a cable inlet, and a cable reel within the casing, the reel being rotatable within the casing to allow cable to be wound
05 on to the reel, the reel comprising a shaft and a disk adjacent the cable inlet of the casing which is detachable from the shaft and formed in two parts with a central cable receiving aperture on the line of join of the two parts, the shaft of the reel at the end receiving the split disk having at
10 least one axial slot extending from the end of the shaft whereby a cable inserted through the aperture in the split disk can pass through the slot into the interior of the casing and through the cable outlet, and means for rotating the reel to wind up cable onto the reel.

15 The cable storage device of the invention is used as follows. The two halves of the casing are separated, the split disk is removed from the shaft and the parts separated. The two parts of the disk are then placed around the cable with the cable lying in the cable receiving aperture and the disk is refitted
20 to the shaft with the cable passing through the slot in the end of the shaft. The two parts of the housing are then connected together so that the cable passes through the cable outlet.

-4-

With this arrangement, the cable storage device may be positioned at any position along the length of the cable so that a desired length may be left trailing but extra cable may be obtained simply by pulling it off the
05 reel.

The device also may be used in the same manner as the prior device described above and fitted at the mid point of the cable so the cable can be pulled off the storage device
10 from the two ends simultaneously. In this case, the shaft of the reel will have a cable receiving slot extending completely across its width.

The reel may be rotated by hand to wind up the
15 cable thereon, for example by a handle outside the casing. Preferably however the reel is spring loaded such that pulling the cable off the reel tensions the spring. The spring may be locked in its tensioned state, for example, by means of a pawl and ratchet arrangement. The casing
20 preferably has an upstanding post on which the reel is mounted and which provides an anchorage for the inner end of a helical spring and the reel includes a second disk member forming the bottom of a cup-like member for enclosing the spring and providing an anchorage for the outer end of
25 the spring. Around the lip of the cup-like member may be formed an outwardly extending annular flange having ratchet teeth which engage with a movable pawl which can be actuated from outside the casing.

-5-

The cable inlet to the casing will normally be a circular aperture of diameter substantially the same as that of the split disk and which has an undercut portion to receive a circumferential flange on the split disk to retain the reel
05 within the housing and to provide a bearing surface on which the reel can rotate.

The reel may be retained within the housing by means of a screw or bolt passing through the post on the bottom part of
10 the housing and passing into the spindle of the reel, or in any other desired way.

The two halves of the housing may be connected together by screws or by snap fastening, a bayonet fixing or, if
15 a permanent joint can be tolerated, by means of an adhesive.

The invention will now be described in greater detail by way of example with reference to the drawings in which:-

20 Fig. 1 is a perspective view of the device of the invention with an electric cable; Fig.2 is planned view of the device of Fig.1 with the cable removed; Fig. 3 is a section on line A-A of Fig. 2; and Fig.4 is an exploded view of the device of Fig. 1.

-6-

As shown in the drawings, the device comprises a casing indicated generally by the reference numeral(1) which is formed in two parts, a lower part(2) and an upper part(3). The joint between the two parts, (2) and (3) of casing
05 (1) is substantially on the median plane of casing(1).

The casing(1) is generally pear shaped in plan and comprises a portion(4) of circular section and a peripheral bulge(5).

10

An elongate cable outlet slot(6) is positioned on the line of joint of parts(2) and (3) of casing(1) on side of bulge(5) and on the other side bulge(5) is an aperture(7) that receive a pawl(8).

15 Upper part(3) of casing(1) has a circular cable inlet aperture(9) arranged coaxially of circular portion(4) of the casing(1). The lower part(2) of casing(1), coaxial with the circular portion(4) has an upstanding post(11) which has a hollow center (12) and interengaging axial and annular
20 slots(13) and (14) for receiving and anchoring the inner end(15) of a helical spring(16).

Within the casing(1) is a reel assembly(17) comprising a square section spindle(18) and upper and lower circular

-7-

disks(19) and (20), respectively. Lower disk(20), is permanently attached to spindle(18) and forms the base of a downwardly projecting cup-like member(21) which surrounds spring(16) and provides an attachment for the outer
05 end thereof (not shown) so that rotation of the spindle(18) and the attached cup-like member(21) tensions the spring(16).

At the open end of the cup-like member(21) is an annular flange(22) having ratchet teeth(23) for engaging with
10 pawl(8) such that when the spring(16) is under tension it can be retained in such state by engagement of the pawl(8) with one of the teeth(23).

The upper disk(19) is in two parts and has a central cable
15 receiving aperture(24) on the line of joint(25) of the two parts. Around its lower periphery, disk(19), has a circumferential flange. The diameter of disk(19), excluding flange(26), is approximately the same as the diameter of aperture(9) in upper casing part(3) and the arrangement is
20 such that when disk(19) is located within aperture(9), flange(26) abuts against the underside of casing part(3) in the region surrounding aperture(9) and prevents passage of disk(19) through the aperture(9).

-8-

On its underside each part of disk(19) has a downwardly extending arcuate section(27) surrounding the opening(24) such that when the two parts of the disk(19) are brought together the two arcuate members(27) form a pillar that will
05 fit inside an open end of spindle(18).

The arcuate portions(27) are formed with grooves(28) such that a cable passed through the cable receiving aperture(24) can be led laterally out of the cooperating
10 arcuate portions(27) into the interior of the casing(1). To allow this, the upper end(20) of spindle(18) is bifurcated such as to allow a cable to pass laterally through the spindle(18). The upper end(29) of spindle(18) is provided with undercut clips(30) that can be passed
15 through slots(31), one in each part of disk(19) and resiliently clip over the top surface of disk(19) to hold the assembled disk(19) firmly on the spindle(18).

On the underside of lower disk(20) spindle(18) continues
20 downwardly as a cylindrical rod (not shown) which fits into the socket formed by the hollow center(12) of post(11) to provide an axle for rotation of reel assembly(17). A bolt(32) passes axially through spindle(18) and within the extension rod and connects with a nut(33) to hold the reel
25 assembly(17) firmly in position within the lower part(2) of casing(1).

-9-

In use of the device the two parts(2) and (3) of casing(1) are separated and disk(19) is removed from spindle(18) and its two halves separated. A cable(34) is placed in one half of cable receiving aperture(24) and the two halves of
05 disk(19) are brought together and reassembled onto shaft(18) with the cable passing through groove(28) and the bifurcate section of the upper end(29) of spindle(18). The cable(34) is then wound around spindle(18) until a desired length remains. This length(35) is positioned in cable outlet(6).
10 The upper half(3) of casing(1) is then reconnected to lower part(2). Pulling cable end(35) through cable outlet(6) causes reel assembly(17) to rotate thereby tensioning spring(16). When the desired length of cable(35) has been pulled off the reel, the pawl(8) may be brought
15 into engagement with ratchet teeth(23) to retain the reel assembly(17) against back rotation under the influence of the tensioned spring(16). When it is desired to rewind the cable(35), pawl(8) is released and the spring causes reel assembly(17) to rotate to rewind the cable on spindle(18).

-10-

In an alternative use of the device, if it is desired to connect the device at the mid-point of a cable so that the cable can be drawn off from both ends simultaneously. The cable(34) can be passed through the two grooves(28) in the portions(27) of disk(19) and between the bifurcate end(29) of spindle(18). The two ends of the cable, each of which have a connector or are connected to an appliance, can then both be passed through cable outlet(6).

-11-

CLAIMS

1. An electrical cable storage device comprising a two part hollow casing(1) having a cable outlet(6) opening on the line of join of the two parts(2,3) of the casing and a cable inlet(9), and a cable reel(17) within the casing, the reel(17) being rotatable within the casing(1) to allow cable(34,35) to be wound on to the reel(17), the reel(17) comprising a shaft(18) and a disk(19) adjacent the cable inlet(9) of the casing(1) which is detachable from the shaft(18) and formed in two parts with a central cable receiving aperture(24) on the line of join(25) of the two parts, the shaft(18) of the reel(17) at the end(29) receiving the split disk(19) having at least one axial slot extending from the end of the shaft(18) whereby a cable(34,35) inserted through the aperture(25) in the split disk(19) can pass through the slot into the interior of the casing(1) and through the cable outlet(6), and means for rotating the reel(17) to wind cable onto the reel(17).

- 12 -

2. A device according to claim 1, wherein the reel(17) is spring loaded such that pulling the cable off the reel(17) tensions the spring(16).
- 05 3. A device according to claim 2, wherein the spring(16) may be locked in its tensioned state, by means of a pawl(8) and ratchet(23) arrangement.
- 10 4. A device according to claim 2 or claim 3, wherein the casing(1) has an upstanding post(11) on which the reel(17) is mounted and which provides an anchorage for the inner(15) end of a helical spring(16) and the reel(17) includes a second disk member(20) forming the bottom of a cup-like member(21) for enclosing the
15 spring(16) and providing an anchorage for the outer end of the spring(16).
- 20 5. A device according to claim 4, wherein an outwardly extending annular flange(22) having ratchet teeth(23) which engage with a movable pawl(8) which can be actuated from outside the casing(1) is formed around the lip of cup-like member(25).

- 05 6. A device according to any one of claims 1 to 5, wherein the cable inlet(9) to the casing(1) is a circular aperture of diameter substantially the same as that of the split disk(19) which has an undercut portion to receive a circumferential flange(26) on the split disk(19) to retain the reel(17) within the housing(1) and to provide a bearing surface on which the reel(17) can rotate.

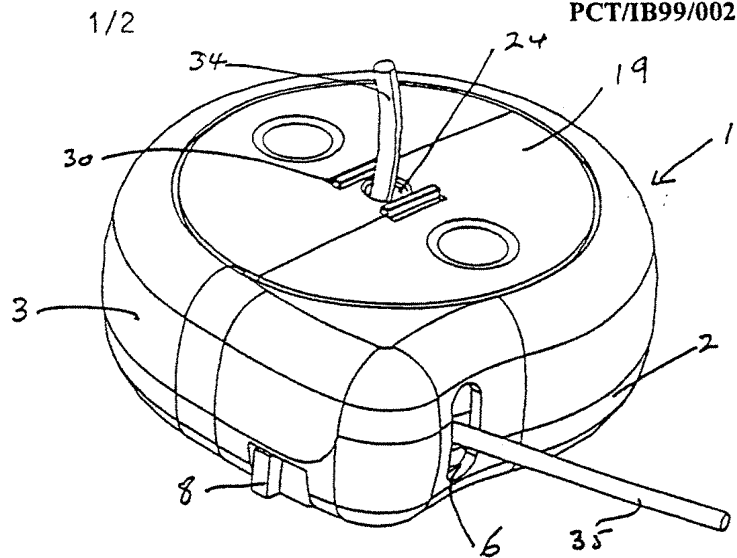


Fig 1

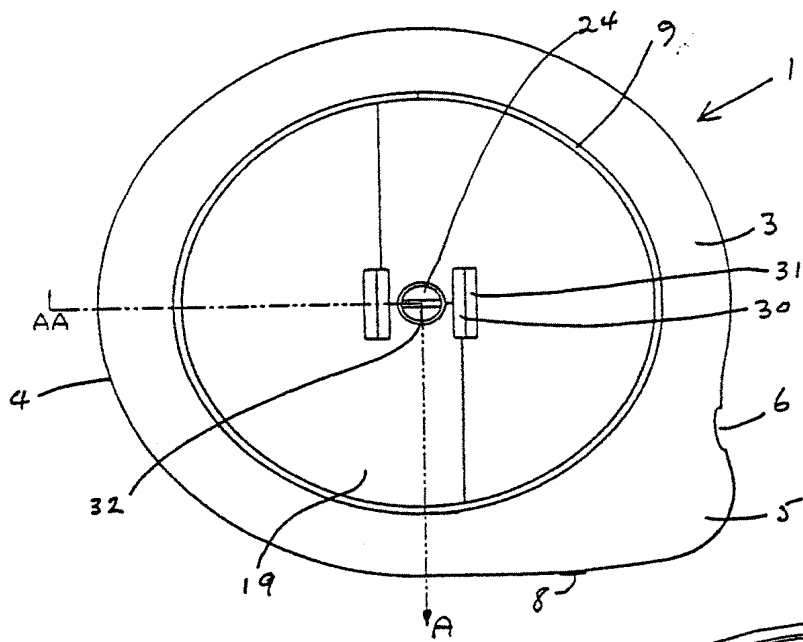


Fig 2

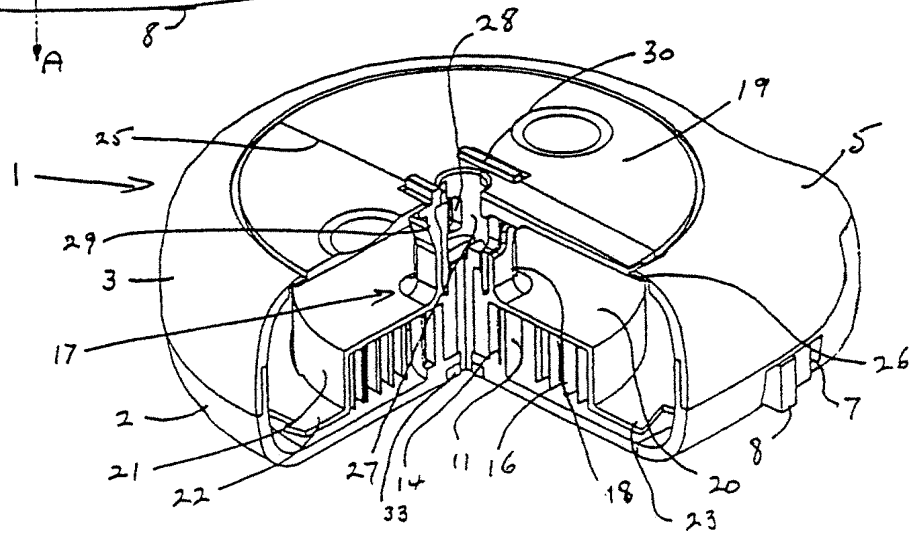


Fig 3

2/2

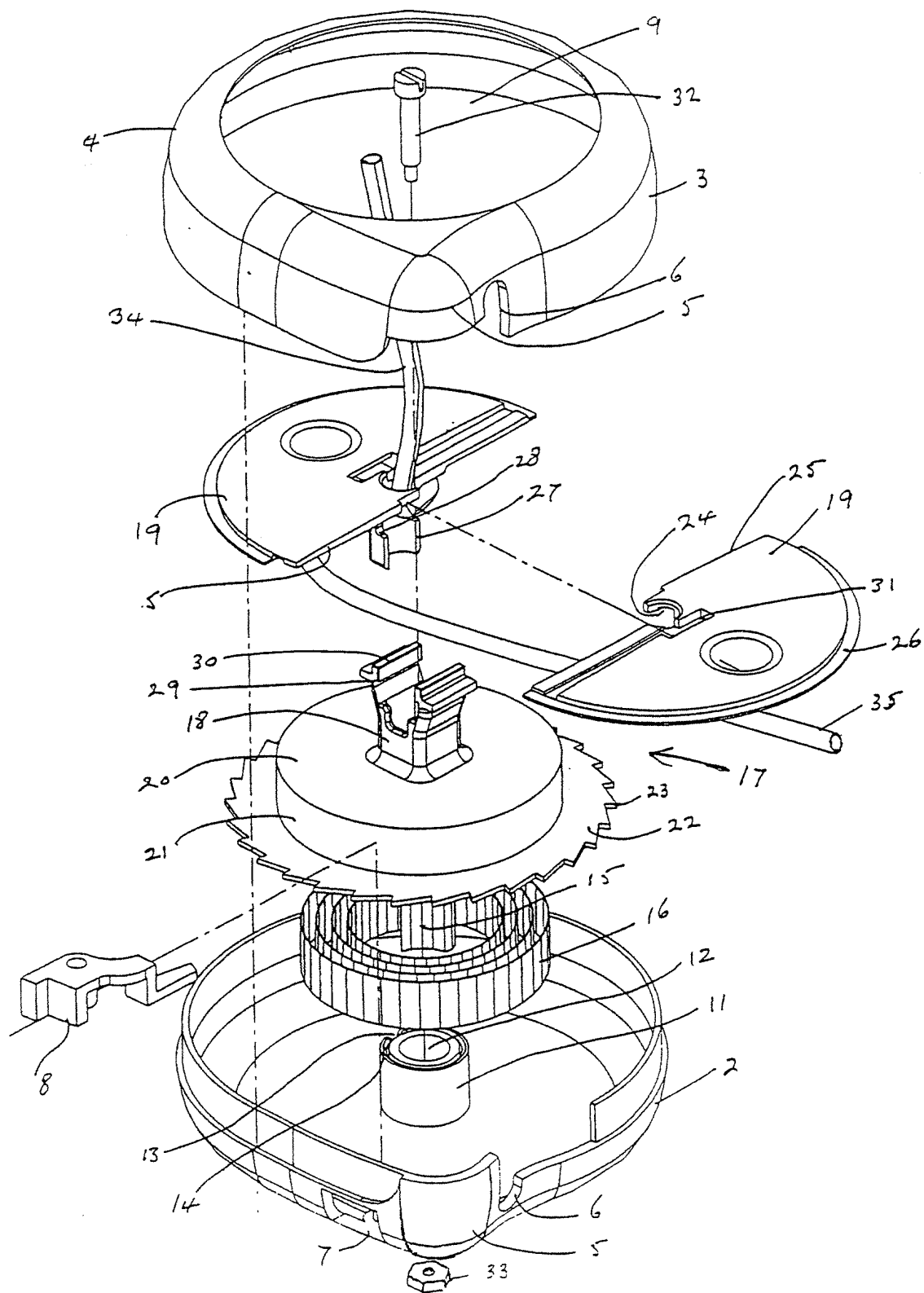


Fig 4

INTERNATIONAL SEARCH REPORT

International application No.
PCT/IB 99/00251

A. CLASSIFICATION OF SUBJECT MATTER				
Int Cl ⁶ : B65H 75/34, 75/00				
According to International Patent Classification (IPC) or to both national classification and IPC				
B. FIELDS SEARCHED				
Minimum documentation searched (classification system followed by classification symbols) IPC : B65H 75/IC				
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched				
Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) WPAT : SPRING: OR TENSION: RATCHET# OR PAWL# OR COG#				
C. DOCUMENTS CONSIDERED TO BE RELEVANT				
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.		
A	US 4384688 A (SMITH) 24 May 1983 whole document	1		
A	US 4543982 A (WOLFE E.B.) 1 OCTOBER 1985 whole document	1		
<div style="display: flex; justify-content: space-between;"> <input type="checkbox"/> Further documents are listed in the continuation of Box C <input type="checkbox"/> See patent family annex </div>				
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